the catalogued right ascensions and north polar distances being too large.

The remaining observations of the Comet, extending to the 7th instant, shall be forwarded, if possible, by next mail.

Windsor, N.S. Wales,
    October 22, 1874.

Ephemeris for Physical Observations of Jupiter.
By A. Marth.

(Communicated by Warren De La Rue, Esq.)

Greenwich, Noon.	Angle of position of ♃'s axis.	Western long. of ♃'s meridian turned to the Earth.	Difference of long. of Sun and Earth.	Latitude of Earth above ♃'s Equator.	Latitude of Sun above ♃'s Equator.
1875.	°	° °	° °	°	°
Feb. 20	21·40	125·04	−9·06	−3·19	−2·83
		4356·46	+0·50		
25	21·43	158·50	8·56	3·21	2·84
		3·52	·57		
Mar. 2	21·47	192·02	7·99	3·22	2·85
		3·57	·65		
7	21·53	225·59	7·34	3·23	2·86
		3·62	·72		
12	21·61	259·21	6·62	3·24	2·86
		3·66	·79		
17	21·70	292·87	5·83	3·24	2·87
		3·68	·84		
22	21·80	326·55	4·99	3·24	2·88
		3·70	·90		
27	21·92	0·25	4·09	3·24	2·89
		3·71	·95		
Apr. 1	22·04	33·96	3·14	3·24	2·89
		3·71	·98		
6	22·17	67·67	2·16	3·23	2·90
		3·69	1·00		
11	22·30	101·36	1·16	3·21	2·91
		3·67	1·01		
16	22·43	135·03	− 0·15	3·20	2·91
		3·64	1·02		
21	22·56	168·67	+ 0·87	3·18	2·92
		3·59	1·01		
26	22·68	202·26	1·88	3·16	2·92
		3·53	0·99		
May 1	22·80	235·79	2·87	3·13	2·93
		3·46	·96		
6	22·91	269·25	3·83	3·11	2·94
		3·39	·92		
11	23·01	302·64	4·75	3·03	2·94
		3·31	·87		
16	23·10	335·95	5·62	3·05	2·95
		3·22	·82		

Greenwich, Noon. 1875.	Angle of position of ♃'s axis. °	Western long. of ♃'s meridian turned to the Earth. °		Difference of long. of Sun and Earth. °	°	Latitude of Earth | Sun above ♃'s Equator.	
						Earth °	Sun °
May 21	23·17	9·17		6·44		3·02	2·95
			3·13		·76		
26	23·24	42·30		7·20		3·00	2·96
			3·04		·68		
31	23·30	75·34		7·88		2·97	2·96
			2·94		·62		
June 5	23·34	108·28		8·50		2·94	2·97
			2·85		·54		
10	23·37	141·13		9·04		2·91	2·97
			2·76		·47		
15	23·38	173·89		9·51		2·89	2·98
			2·66		·40		
20	23·39	206·55		9·91		2·87	2·98
			2·58		·32		
25	23·38	239·13		10·23		2·85	2·96
			4352·50		+0·24		
30	23·35	271·63		+10·47		−2·83	2·99

The longitudes of the meridians on *Jupiter's* surface are here reckoned from an arbitrary First Meridian (that which, at midnight preceding January 1, 1872, was apparently directed to the Earth), which is (arbitrarily) assumed to rotate at the daily rate of 870°·60. The adopted constant of the equation of light is 497^s·78. The "difference of longitude of Sun and Earth," or the "annual parallax" on which the computation of phase depends, is, of course, reckoned in the plane of *Jupiter's* equator. The position of this plane has been assumed in accordance with Damoiseau's determination of it for 1750, from the observed eclipses of the third satellite. This position is for 1875·0.

				°
Inclination of *Jupiter's* equator to cel. equator of 1875·0			=	25·4351
Node	„	„ on „ „	„	357·9682
Inclination	„	„ to ecliptic	„	2·1504
Node	„	„ on „	„	336·0583
Arc	„	„ between ecliptic and equator		337·9088

Ephemerides of 12 close Circumpolar Stars suitable for the determination of Azimuth Error. By the Rev. C. Pritchard, F.R.S., Savilian Professor of Astronomy.

As the time is approaching when we may hope to commence active work at the new *University Observatory* in Oxford, I felt it desirable to complete such preparations as might facilitate our operations. We do not intend to undertake any meridional

observations beyond those necessary for the exact determination of our Time: hence we should sometimes find it inconvenient to wait in the transit room, and away from our proper work, until stars suitable for the Azimuth Correction for the instrument might come to the meridian. On this ground chiefly I requested Mr. W. E. Plummer, whom, on account of his great experience and excellent reputation as an astronomer, I have been glad to appoint as Principal Assistant, to select twelve close circumpolar stars in such positions that they might come to our meridian in pairs above and below pole, and at hours when we could not conveniently avail ourselves of the four circumpolars inserted in the *Nautical Almanac.*

For the sake of shortening the tables as much as possible, our Ephemerides have been calculated for every five days, so as to bring them within the reach of the simplest interpolation for intervening days. In so doing it was useless, with such intervals of time, to apply the terms involving $2 \, \mathbb{D}$ in the nutation; but, in order to give the results all necessary exactness, a very short table has been appended, whereby, after the interpolation has been made for any of the four intervening days, the small correction may be applied for the term involving $2 \, \mathbb{D}$ already referred to. The simple process required for this exact determination need not require the expenditure of two minutes; and it was considered by us preferable to adopt this course rather than extend our Ephemerides to five times their present length.

Having thus prepared our Ephemeris for 1875, with a view to our own convenience, it occurred to me that the publication of these tables might prove a convenience and a boon to other observatories also; and if that convenience should eventually be found to be substantial and considerable, then it might be probable that the Director of the *Nautical Almanac* would take the matter into his consideration for future years.

The Catalogues that have been used in the formation of the mean place for 1875·0 are those published from the Radcliffe and Redhill Observatories (for these contain a greater number of observations of stars of considerable declination than are to be found in any other volumes of observations), and to make the place as reliable as possible, no star has been selected that has not at least 30 observations of Right Ascension. The precessions were computed from the rigorous formulæ employing the constants of Professor Peters for lunisolar and planetary precession, and the final results examined to detect, if possible, any proper motion. To the two stars Radcliffe 2594 and Groombridge 1850 an annual proper motion in Right Ascension of $+0^{s}\cdot020$ and $-0^{s}\cdot041$ respectively, referred to the Equator of 1875, has been applied. With this proper motion (determined from about 30 years' observation only) the probable error of the mean place is reduced from $0^{s}\cdot239$ to $0^{s}\cdot138$ in the first case, and from $0^{s}\cdot223$ to $0^{s}\cdot025$ in the latter. The precessions in Declination have been applied as rigorously as in Right Ascension; but the results have

not been examined for the detection of proper motion, since the same amount of accuracy was not required.

The accompanying table sufficiently describes itself.

Star's Name.	Mag.	No. of Obs. of R.A.	Mean R.A. 1875·0.			Prob. Error of Mean R.A. × cos δ.	No. of Obs. of δ.	Mean δ 1875·0.		
			h	m	s	s		o	′	″
Radcliffe 713	7·9	32	2	25	22·211	0·009	13	86	30	2·1
Groombridge 642	6·0	73	3	25	41·559	0·025	22	86	14	54·6
Radcliffe 1474	7·9	33	5	32	27·583	0·016	27	87	18	50·3
Radcliffe 2368	7·8	36	9	36	23·848	0·006	25	87	10	16·2
Radcliffe 2594	7·6	58	10	58	19·796	0·004	28	88	19	5·3
Groombridge 1850	6·5	78	11	58	26·193	0·001	41	86	16	45·9
Groombridge 2099	7·3	38	14	2	30·447	0·022	25	86	21	21·9
Groombridge 2283	7·0	74	15	18	18·106	0·016	27	87	42	36·3
Radcliffe 3750	8·5	36	16	47	34·353	0·002	19	89	16	46·2
Groombridge 3548	7·6	101	21	24	11·668	0·009	45	86	30	57·2
Radcliffe 5776	7·4	52	22	28	1·426	0·009	37	87	26	46·2
Groombridge 4101	5·7	70	23	27	48·174	0·024	56	86	37	3·5

The interval chosen for the computation of apparent places is sufficiently short to make interpolation easy, but not short enough to admit of the incorporation of the terms that involve functions of $2\,\mathbb{D}$. To facilitate the computation of this correction, the following table is given, with the necessary factors for each star. The numbers in brackets are logarithms.

Radcliffe 713	$-(8\cdot8116)\sin 2\,\mathbb{D}$	$-(8\cdot8903)\cos 2\,\mathbb{D}$
Groombridge 642	$-(8\cdot8866)$,,	$-(8\cdot7492)$,,
Radcliffe 1474	$-(9\cdot1039)$,,	$-(8\cdot1781)$,,
Radcliffe 2368	$-(8\cdot8848)$,,	$+(8\cdot9855)$,,
Radcliffe 2594	$-(8\cdot7887)$,,	$+(9\cdot2871)$,,
Groombridge 1850	$-(8\cdot1140)$,,	$+(8\cdot9577)$,,
Groombridge 2099	$+(8\cdot4895)$,,	$+(8\cdot9016)$,,
Groombridge 2283	$+(8\cdot9573)$,,	$+(8\cdot9808)$,,
Radcliffe 3750	$+(9\cdot5986)$,,	$+(9\cdot1637)$,,
Groombridge 3548	$+(8\cdot6382)$,,	$-(8\cdot8771)$,,
Radcliffe 5776	$+(8\cdot5437)$,,	$-(9\cdot0855)$,,
Groombridge 4101	$+(6\cdot5898)$,,	$-(8\cdot9949)$,,

The Ephemeris is, then, as follows :—

Apparent Places for Greenwich Mean Midnight.

Date. 1875.	Radcliffe 713. R.A. h m s	δ ° ′ ″	Groombridge 642. R.A. h m s	δ ° ′ ″	Radcliffe 1474. R.A. h m s	δ ° ′
Jar. 1	2 25 23·14	86 30 23·1	3 25 47·98	86 15 14·6	5 32 50·31	87 19 ?
6	21·68	24·0	46·93	15·9	50·00	?
11	20·15	24·8	45·76	16·9	49·46	?
16	18·55	25·4	44·49	17·9	48·71	8
21	16·89	25·9	43·13	18·8	47·75	10
26	15·19	26·2	41·70	19·5	46·59	11
31	13·48	26·3	40·21	20·0	45·25	12
Feb. 5	11·77	26·3	38·67	20·4	43·72	13
10	10·07	26·1	37·09	20·6	42·03	14
15	8·40	25·8	35·50	20·6	40·20	1
20	6·79	25·2	33·91	20·6	38·27	1
25	5·24	24·5	32·35	20·4	36·23	1
Mar. 2	3·77	23·8	30·82	19·9	34·11	1
7	2·40	22·8	29·35	19·4	31·95	1
12	1·14	21·8	27·96	18·7	29·78	1
17	25 0·01	20·7	26·65	17·8	27·60	1
22	24 59·01	19·5	25·42	16·9	25·43	1
27	58·15	18·2	24·29	15·9	23·30	1
Apr. 1	57·46	16·8	23·28	14·7	21·25	1
6	56·92	15·3	22·41	13·5	19·28	1
11	56·54	13·9	21·70	12·1	17·41	1
16	56·34	12·4	21·13	10·7	15·67	1
21	56·30	10·9	20·70	9·4	14·07	1
26	56·43	9·4	20·42	8·0	12·62	1
May 1	56·72	8·0	20·30	6·4	11·34	1
6	57·18	6·5	20·33	4·9	10·24	1
11	57·81	5·1	20·52	3·5	9·33	
16	58·59	3·8	20·87	2·0	8·62	
21	24 59·51	2·6	21·36	15 0·6	8·12	
26	2 25 0·57	86 30 1·4	3 25 22·00	86 14 59·2	5 32 7·82	87 19

Apparent Places for Greenwich Mean Midnight.

Date. 1875.	Radcliffe 2368. R.A. h m s	δ ° ' "	Radcliffe 2594. R.A. h m s	δ ° ' "	Groombridge 1850. R.A. h m s	δ ° ' "
Jan. 1	9 36 50·22	87 10 8·6	10 58 55·55	88 18 51·2	11 58 37·86	86 16 28·2
6	52·08	9·6	59·26	51·7	39·64	28·2
11	53·78	10·7	59 2·81	52·3	41·39	28·4
16	55·30	11·9	6·16	53·1	43·09	28·7
21	56·63	13·2	9·29	54·1	44·72	29·2
26	57·76	14·6	12·17	55·1	46·28	29·9
31	58·69	16·0	14·78	56·2	47·76	30·7
Feb. 5	59·39	17·5	17·10	57·5	49·15	31·6
10	36 59·88	19·1	19·10	18 58·8	50·42	32·7
15	37 0·15	20·6	20·76	19 0·2	51·56	33·8
20	0·21	22·2	22·07	1·7	52·55	35·1
25	37 0·04	23·8	23·03	3·2	53·39	36·5
Mar. 2	36 59·64	25·3	23·62	4·8	54·09	37·9
7	59·03	26·8	23·84	6·4	54·63	39·4
12	58·22	28·2	23·71	8·0	55·01	40·9
17	57·23	29·6	23·21	9·5	55·22	42·4
22	56·07	30·9	22·37	10·9	55·28	44·0
27	54·74	32·1	21·19	12·3	55·17	45·5
Apr. 1	53·27	33·1	19·70	13·8	54·90	47·0
6	51·66	34·1	17·90	15·1	54·47	48·5
11	49·95	34·9	15·82	16·3	53·91	49·9
16	48·15	35·6	13·49	17·4	53·21	51·3
21	46·27	36·1	10·93	18·3	52·38	52·6
26	44·33	36·5	8·16	19·2	51·42	53·7
May 1	42·36	36·8	5·22	20·0	50·36	54·8
6	40·36	36·9	2·12	20·7	49·19	55·8
11	38·37	36·8	58 58·89	21·2	47·94	56·7
16	36·40	36·7	55·58	21·5	46·61	57·4
21	34·46	36·4	52·20	21·6	45·21	58·0
26	9 36 32·58	87 10 35·9	10 58 48·79	88 19 21·6	11 58 43·76	86 16 58·4

Date. 1875.	Radcliffe 713. R.A.	δ	Groombridge 642. R.A.	δ	Radcliffe 1474. R.A.	δ
	h m s	° ′ ″	h m s	° ′ ″	h m s	° ′ ″
May 31	2 25 1·77	86 30 0·3	3 25 22·79	86 14 57·9	5 32 7·73	87 19 3·3
June 5	3·08	29 59·3	23·71	56·7	7·84	1·8
10	4·51	58·4	24·75	55·5	8·17	19 0·3
15	6·05	57·7	25·94	54·4	8·71	18 58·8
20	7·67	57·0	27·22	53·5	9·45	57·4
25	9·37	56·5	28·60	52·6	10·38	55·9
30	11·13	56·1	30·08	51·8	11·50	54·
July 5	12·96	55·8	31·64	51·1	12·82	53·
10	14·83	55·7	33·29	50·6	14·32	51·
15	16·73	55·7	35·01	50·2	15·98	50·
20	18·65	55·8	36·78	49·8	17·80	49·
25	20·60	56·1	38·59	49·6	19·76	48·
30	22·55	56·5	40·44	49·5	21·87	47·
Aug. 4	24·48	57·0	42·32	49·6	24·12	46·
9	26·40	57·6	44·21	49·7	26·46	45·
14	28·29	58·4	46·11	50·0	28·90	44
19	30·14	29 59·3	48·02	50·5	31·43	44
24	31·94	30 0·3	49·91	51·1	34·05	43
29	33·69	1·4	51·77	51·7	36·74	43
Sep. 3	35·37	2·6	53·60	52·4	39·48	43
8	36·98	3·9	55·39	53·3	42·26	42
13	38·50	5·3	57·14	54·3	45·06	43
18	39·94	6·7	3 25 58·83	55·4	47·88	43
23	41·29	8·3	3 26 0·46	56·6	50·69	43
28	42·53	9·9	2·01	57·9	53·49	43
Oct. 3	43·65	11·6	3·48	14 59·3	56·26	44
8	44·65	13·3	4·85	15 0·7	32 58·99	44
13	45·53	15·1	6·12	2·2	33 1·66	45
18	46·29	17·0	7·30	3·8	4·24	46
23	2 25 46·91	86 30 18·8	3 26 8·36	86 15 5·5	5 33 6·74	87 18 46

[*Cont.* p. 120.]

Date. 1875.	Radcliffe 2368. R.A.			δ			Radcliffe 2594. R.A.			δ			Groombridge 1850. R.A.			δ		
	h	m	s	°	'	"	h	m	s	°	'	"	h	m	s	°	'	"
May 31	9	36	30·76	87	10	35·2	10	58	45·37	88	19	21·5	11	58	42·27	86	16	58·7
June 5			29·02			34·4			41·99			21·3			40·75			58·8
10			27·38			33·6			38·65			20·9			39·21			58·9
15			25·85			32·6			35·38			20·4			37·67			58·8
20			24·42			31·5			32·20			19·7			36·13			58·5
25			23·13			30·2			29·13			18·9			34·60			58·1
30			21·99			28·9			26·22			18·0			33·09			57·6
July 5			20·99			27·5			23·46			16·9			31·63			56·9
10			20·13			26·0			20·86			15·8			30·21			56·1
15			19·43			24·5			18·44			14·5			28·85			55·2
20			18·89			22·9			16·23			13·1			27·55			54·1
25			18·51			21·2			14·25			11·6			26·32			53·0
30			18·30			19·4			12·49			10·1			25·16			51·7
Aug. 4			18·26			17·6			10·97			8·4			24·07			50·3
9			18·39			15·8			9·70			6·7			23·06			48·8
14			18·68			14·0			8·68			5·0			22·16			47·2
19			19·14			12·2			7·92			3·2			21·38			45·5
24			19·76			10·4			7·43		19	1·3			20·70			43·8
29			20·54			8·6			7·20		18	59·4			20·11			42·1
Sep. 3			21·49			6·8			7·25			57·5			19·63			40·2
8			22·60			5·1			7·56			55·6			19·28			38·3
13			23·85			3·4			8·13			53·6			19·04			36·4
18			25·26			1·7			8·98			51·7			18·92			34·5
23			26·80		10	0·1			10·10			49·8			18·92			32·5
28			28·48		9	58·5			11·50			47·9			19·05			30·6
Oct. 3			30·28			57·0			13·16			46·0			19·31			28·7
8			32·21			55·6			15·09			44·2			19·69			26·7
13			34·25			54·4			17·27			42·5			20·20			24·8
18			36·40			53·3			19·69			40·8			20·83			23·0
23	9	36	38·64	87	9	52·3	10	58	22·32	88	18	39·2	11	58	21·59	86	16	21·2

Date. 1875.	Radcliffe 713. R.A.			δ			Groombridge 642. R.A.			δ			Radcliffe 1474. R.A.			δ		
	h	m	s	°	'	"	h	m	s	°	'	"	h	m	s	°	'	"
Oct. 28	2	25	47·39	86	30	20·7	3	26	9·30	86	15	7·2	5	33	9·14	87	18	47·8
Nov. 2			47·74			22·5			10·12			9·0			11·41			48·9
7			47·94			24·4			10·80			10·7			13·57			50·1
12			48·01			26·3			11·34			12·5			15·58			51·4
17			47·93			28·2			11·74			14·3			17·43			52·8
22			47·68			30·0			12·00			16·1			19·10			54·3
27			47·27			31·7			12·11			17·9			20·58			55·8
Dec. 2			46·72			33·4			12·06			19·6			21·87			57·3
7			46·02			35·0			11·87			21·3			22·95		18	58·9
12			45·18			36·5			11·53			22·9			23·81		19	0·5
17			44·20			37·9			11·03			24·6			24·46			2·2
22			43·09			39·2			10·39			26·2			24·88			3·9
27			41·86			40·3			9·61			27·6			25·05			5·5
32	2	25	40·52	86	30	41·2	3	26	8·70	86	15	29·0	5	33	24·96	87	19	7·1

Date. 1875.	Groombridge 2099. R.A.			δ			Groombridge 2283. R.A.			δ			Radcliffe 3750. R.A.			δ		
	h	m	s	°	'	"	h	m	s	°	'	"	h	m	s	°	'	"
Jan. 1	14	2	31·08	86	21	0·7	15	18	7·78	87	42	15·9	16	46	23·76	89	16	29·6
6			32·69		20	59·8			9·73			14·5			26·83			27·9
11			34·35			59·1			11·85			13·3			30·70			26·4
16			36·06			58·5			14·12			12·3			35·31			25·0
21			37·79			58·1			16·53			11·5			40·60			23·7
26			39·54			57·9			19·06			10·9			46·53			22·6
31			41·29			57·9			21·66			10·4		46	53·02			21·5
Feb. 5			43·03			58·1			24·32			10·1		47	0·04			20·6
10			44·73			58·4			27·02			9·9			7·49			19·8
15			46·37			58·8			29·73			9·9			15·29			19·2
20			47·94		20	59·4			32·42			10·1			23·36			18·7
25			49·43		21	0·2			35·06			10·3			31·61			18·4
Mar. 2			50·83			1·1			37·63			10·5			39·97			18·2
7			52·12			2·1			40·09			11·0			48·34			18·2
12	14	2	53·28	86	21	3·3	15	18	42·43	87	42	11·8	16	47	56·66	89	16	18·3

[*Cont.* p. 122.]

Date. 1875.	Radcliffe 2368. R.A.			δ		Radcliffe 2594. R.A.			δ		Groombridge 1850. R.A.			δ	
	h	m	s	°	' "	h	m	s	°	' "	h	m	s	°	' "
Oct. 28	9	36	40·96	87	9 51·2	10	58	25·16	88	18 37·8	11	58	22·46	86	16 19·3
Nov. 2			43·35		50·3			28·22		36·4			23·45		17·6
7			45·79		49·5			31·49		35·1			24·56		16·0
12			48·27		48·9			34·93		33·9			25·77		14·4
17			50·77		48·5			38·51		32·8			27·09		12·9
22			53·29		48·2			42·23		31·9			28·50		11·0
27			55·82		47·9			46·07		31·2			30·00		10·4
Dec. 2		36	58·32		47·8			49·99		30·5			31·57		9·4
7		37	0·78		48·0			53·96		30·0			33·21		8·4
12			3·18		48·3		58	57·96		29·6			34·91		7·5
17			5·51		48·7		59	1·97		29·4			36·66		6·8
22			7·74		49·3			5·93		29·5			38·45		6·3
27			9·88		50·0			9·85		29·7			40·24		6·1
32	9	37	11·93	87	9 50·8	10	59	13·73	88	18 30·1	11	58	42·02	86	16 6·1

Date. 1875.	Groombridge 3548. R.A.			δ		Radcliffe 5775. R.A.			δ		Groombridge 4101. R.A.			δ	
	h	m	s	°	' "	h	m	s	°	' "	h	m	s	°	' "
Jan. 1	21	23	49·20	86	31 3·6	22	27	34·81	87	26 57·9	23	27	32·05	86	37 19·3
6			47·85		2·5			32·58		57·2			30·24		19·0
11			46·65		31 1·2			30·49		56·3			28·48		18·6
16			45·59		30 59·9			28·55		55·4			26·79		18·0
21			44·69		58·4			26·78		54·3			25·19		17·2
26			43·95		56·9			25·19		53·0			23·69		16·2
31			43·37		55·4			23·79		51·6			22·31		15·1
Feb. 5			42·96		53·8			22·61		50·1			21·05		13·9
10			42·74		52·2			21·65		48·6			19·93		12·6
15			42·70		50·6			20·92		47·1			18·97		11·3
20			42·83		49·0			20·42		45·5			18·17		9·9
25			43·14		47·4			20·16		44·0			17·53		8·4
Mar. 2			43·61		45·8			20·14		42·4			17·07		6·9
7			44·25		44·3			20·36		40·8			16·78		5·3
12	21	23	45·05	86	30 42·9	22	27	20·80	87	26 39·3	23	27	16·67	86	37 3·8

Date. 1875.	Groombridge 2099. R.A.	δ	Groombridge 2283. R.A.	δ	Radcliffe 3750. R.A.	δ
	h m s	° ′ ″	h m s	° ′ ″	h m s	° ′ ″
Mar. 17	14 2 54·30	8 26 4·5	15 18 44·64	87 42 12·7	16 48 4·82	89 16 18·
22	55·19	5·8	46·69	13·7	12·74	18·
27	55·93	7·2	48·55	14·8	20·31	19·
Apr. 1	56·52	8·6	50·21	16·0	27·51	20·
6	56·95	10·1	51·64	17·3	34·26	21·
11	57·23	11·6	52·84	18·7	40·49	22·
16	57·35	13·2	53·82	20·1	46·12	23·
21	57·30	14·7	54·57	21·6	51·13	24·
26	57·10	16·3	55·05	23·1	55·47	25·
May 1	56·74	17·7	55·28	24·5	48 59·11	27·
6	56·24	19·1	55·28	26·0	49 2·03	28·
11	55·59	20·5	55·01	27·5	4·19	30·
16	54·80	21 8	54·48	29·0	5·54	31·
21	53·89	23·1	53·72	30·5	6·12	33·
26	52·85	24·2	52·73	31·9	5·91	34·
31	51·70	25·3	51·54	33·3	4·93	36·
June 5	50·45	26·2	50·12	34·6	3·17	37·
10	49·09	27·0	48·49	35·8	49 0·65	39·
15	47·65	27·7	46·67	36·9	48 57·39	40·
20	46·15	28·3	44·67	37·9	53·40	41·
25	44·59	28·8	42·50	38·9	48·73	43·
30	42·97	29·1	40·19	39·7	43·39	44·
July 5	41·31	29·2	37·74	40·4	37·41	45·
10	39·62	29·3	35·16	40·9	30·84	46·
15	37·90	29·3	32·48	41·4	23·72	47·
20	36·16	29·1	29·71	41·7	16·10	48·9
25	34·43	28·7	26·88	41·9	48 8·01	49·7
30	32·71	28·2	23·99	42·0	47 59·50	50·4
Aug. 4	31·01	27·6	21·04	41·9	50·62	51·0
9	14 2 29·34	86 21 26·8	15 18 18·06	87 42 41·7	16 47 41·41	89 16 51·5

Date. 1875.	Groombridge 3548. R.A.			δ			Radcliffe 5776. R.A.			δ			Groombridge 4101. R.A.			δ		
	h	m	s	°	′	″	h	m	s	°	′	″	h	m	s	°	′	″
Mar. 17	21	23	45·99	86	30	41·6	22	27	21·47	87	26	37·8	23	27	16·75	86	37	2·3
22			47·06			40·4			22·38			36·4			17·00		37	0·7
27			48·26			39·3			23·50			35·1			17·41		36	59·2
Apr. 1			49·58			38·3			24·81			33·8			17·99			57·7
6			51·01			37·4			26·29			32·6			18·75			56·4
11			52·52			36·6			27·95			31·6			19·66			55·1
16			54·10			36·1			29·76			30·6			20·71			53·9
21			55·72			35·7			31·70			29·8			21·88			52·8
26			57·38			35·4			33·75			29·1			23·18			51·8
May 1		23	59·07			35·3			35·89			28·5			24·59			50·9
6		24	0·77			35·3			38·10			28·1			26·10			50·1
11			2·48			35·5			40·37			27·8			27·70			49·5
16			4·16			35·8			42·69			27·7			29·37			49·0
21			6·80			36·3			45·03			27·8			31·08			48·7
26			7·40			36·9			47·35			28·0			32·83			48·5
31			8·94			37·7			49·64			28·4			34·62			48·5
June 5			10·40			38·6			51·89			28·9			36·43			48·6
10			11·77			39·6			54·09			29·5			38·24			48·9
15			13·05			40·7			56·21			30·3			40·02			49·3
20			14·24			41·9		27	58·25			31·3			41·76			49·9
25			15·32			43·3		28	0·19			32·3			43·47			50·6
30			16·30			44·8			2·01			33·4			45·14			51·4
July 5			17·15			46·4			3·69			34·7			46·75			52·3
10			17·86			48·0			5·24			36·1			48·30			53·3
15			18·44			49·6			6·64			37·5			49·75			54·5
20			18·87			51·3			7·90			39·1			51·12			55·8
25			19·16			53·1			9·00			40·7			52·40			57·2
30			19·32			54·9			9·93			42·4			53·58		36	58·7
Aug. 4			19·34			56·7			10·68			44·2			54·65		37	0·3
9	21	24	19·23	86	30	58·5	22	28	11·24	87	26	46·1	23	27	55·60	86	37	1·9

Date. 1875.	Groombridge 2099. R.A. (h m s)	δ (° ' ")			Groombridge 2283. R.A. (h m s)	δ (° ' ")			Radcliffe 3750. R.A. (h m s)	δ (° ' ")		
Oct. 14	14 2 27·69	86	21	26·0	15 18 15·09	87	42	41·4	16 47 31·91	89	16	51·9
19	26·09			25·0	12·12			41·0	22·18			52·2
24	24·55			23·9	9·16			40·4	12·27			52·3
29	23·07			22·7	6·24			39·8	47 2·21			52·4
Sept. 3	21·66			21·4	3·37			39·0	46 52·07			52·3
8	20·32			20·0	18 0·58			38·1	41·91			52·1
13	19·07			18·4	17 57·88			37·0	31·79			51·8
18	17·92			16·7	55·28			35·9	21·73			51·3
23	16·87			15·1	52·77			34·6	11·79			50·8
28	15·92			13·5	50·37			33·3	46 2·05			50
Oct. 3	15·09			11·7	48·12			31·8	45 52·54			49·3
8	14·39			9·9	46·05			30·3	43·31			48·4
13	13·82			7·9	44·15			28·7	34·43			47·3
18	13·36			6·0	42·41			27·0	25·95			46·1
23	13·04			4·0	40·86			25·3	17·90			44·9
28	12·85			2·1	39·52			23·5	10·35			43·6
Nov. 2	12·81	21		0·2	38·39			21·7	45 3·35			42·2
7	12·92	20		58·3	37·49			19·9	44 56·95			40·7
12	13·15			56·3	36·84			18·1	51·20			39·2
17	13·53			54·4	36·42		16	3	46·13			37·6
22	14·07			52·6	36·24			14·4	41·78			35·9
27	14·78			50·9	36·31			12·5	38·19			34·2
Dec. 2	15·64			49·2	36·63			10·8	35·39			32·5
7	16·61			47·6	37·19			9·2	33·39			30·8
12	17·70			46·1	38·00			7·5	32·22			29·0
17	18·89			44·8	39·05			5·8	31·90			27·3
22	20·20			43·5	40·34			4·1	32·43			25·6
27	21·64			42·2	41·87			2·4	33·82			23·8
32	14 2 23·22	86	20	41·0	15 17 43·63	87	42	0·7	16 44 36·06	89	16	22·0

[Concluded.]

Date. 1875.	Groombridge 3548. R.A.	δ	Radcliffe 5776. R.A.	δ	Groombridge 4101. R.A.	δ
	h m s	° ′ ″	h m s	° ′ ″	h m s	° ′ ″
Oct. 14	21 24 18·97	86 31 0·4	22 28 11·63	87 26 47·9	23 27 56·43	86 37 3·7
19	18·57	2·2	11·83	49·7	57·13	5·5
24	18·03	4·0	11·85	51·6	57·70	7·3
29	17·35	5·8	11·69	53·5	58·15	9·2
Sept. 3	16·54	7·6	11·35	55·4	58·46	11·1
8	15·61	9·3	10·83	57·3	58·64	13·1
13	14·55	11·0	10·12	26 59·2	58·68	15·0
18	13·38	12·6	9·23	27 1·0	58·60	16·9
23	12·09	14·2	8·18	2·8	58·38	18·8
28	10·70	15·6	6·97	4·6	58·01	20·8
Oct. 3	9·22	17·0	5·58	6·3	57·50	22·7
8	7·64	18·3	4·02	8·0	56·86	24·5
13	5·97	19·5	2·31	9·6	56·09	26·4
18	4·22	20·6	28 0·47	11·1	55·19	28·2
23	2·41	21·6	27 58·50	12·5	54·18	29·9
28	24 0·56	22·4	56·41	13·8	53·05	31·5
Nov. 2	23 58·67	23·1	54·21	15·0	51·80	33·0
7	56·74	23·7	51·91	16·0	50·44	34·4
12	54·78	24·1	49·52	16·9	48·99	35·7
17	52·80	24·4	47·06	17·7	47·45	36·9
22	50·82	24·6	44·53	18·4	45·83	38·0
27	48·87	24·6	41·96	18·9	44·13	39·0
Dec. 2	46·95	24·4	39·37	19·2	42·37	39·8
7	45·06	24·1	36·78	19·4	40·56	40·4
12	43·23	23·7	34·21	19·5	38·72	40·9
17	41·48	23·1	31·66	19·4	36·85	41·2
22	39·83	22·4	29·16	19·1	34·98	41·3
27	38·28	21·5	26·72	18·7	33·12	41·4
32	21 23 36·82	86 31 20·5	22 27 24·34	87 27 18·2	23 27 31·29	86 37 41·4

[*Concluded*]

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